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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,155	02/28/2005	Jacobus Antonius Loontjens	4662-289	5708

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EXAMINER

GILLESPIE, BENJAMIN

ART UNIT	PAPER NUMBER
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1711

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/505,155	Applicant(s) LOONTJENS ET AL.	
	Examiner Benjamin J. Gillespie	Art Unit 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelb, II et al ('094), herein referred to as: Nelb et al in view of Kolouch et al ('167). Patentees disclose a process for preparing high molecular weight linear polyamides, copolyamides, or polyester-amide block copolymers by melt-mixing a lower molecular weight polyamide, copolyamide, or polyester-amide with a blocked or unblocked aliphatic diisocyanates at a temperature between 150°C and 350°C (Abstract; col 2 lines 36-51; col 3 lines 49-42; col 4 lines 30-34). In particular the blocking agents consist of phenol, lactam, alcohol, or oximes, and resulting diisocyanate is present in an amount between 0.1 to 10% by weight based on low molecular weight polymer (Col 3 lines 43-47; col 4 lines 59-62).
2. The melt mixing is done in twin screw extruder, and although Nelb et al fail to specify a reaction time less than two minutes, column 9 lines 29-31 explain that maximum viscosity is obtained after only four minutes, therefore the position is taken that a permanent increase in molecular weight, i.e. chemical reaction between isocyanate group and isocyanate-reactive group, occurs within two minutes (Col 9 lines 29-31). Nelb et al fails however to teach polyamides, copolyamides, or polyester-amide block copolymers that have hydroxyl groups as their isocyanate-reactive species.

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3. Kolouch et al also teach a method for producing high molecular weight linear polyesters by melt-mixing a lower molecular weight polyamide, copolyamide, or polyester-amide with aliphatic diisocyanates, wherein the diisocyanate and low molecular weight polymer are melt-mixed and reacted in a twin-screw extruder at a temperature between 255°C and 320°C (Col 1 lines 35-69). Furthermore, patentees teach that the low molecular weight polyesters can have either carboxyl or hydroxyl groups as the isocyanate-reactive species (Col 2 lines 29-33).

4. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the carboxyl-functional polymers of Nelb et al for hydroxyl functional polymers based on the motivation that Kolouch et al they are both suitable for producing high molecular weight polyesters based on the same diisocyanates and an analogous processing method. Furthermore, it is prima facie obvious to combine individually old ingredients for their known additive function, i.e. it is obvious to add a known ingredient for its known function; *In re Linder* 173 USPQ 356; *In re Dial et al* 140 USPQ 244.

5. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolouch et al in view of Nelb, II et al ('094), herein referred to as: Nelb et al. Kolouch et al teach a method for producing a high molecular weight linear polyester by melt-mixing a lower molecular weight polyester with an aliphatic diisocyanates in a twin screw extruder, wherein the diisocyanate is present in an amount ranging from 0.6-1.1% based on the low molecular weight polyester (Col 1 lines 35-68; col 3 lines 37-42). In particular the low molecular weight polyester may be hydroxyl or carboxyl functional, and the melt-mixing takes place at a temperature between 255°C and 320°C (Col 2 lines 23-32). However, patentees fail to teach blocked diisocyanates, or a permanent increase in molecular weight within 2 minutes of melt-mixing.

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6. Nelb et al teach a method for increasing the molecular weight of low molecular weight polyester compounds, by reacting low molecular weight carboxyl-functional polyester with blocked diisocyanates in a twin screw extruder, wherein the maximum viscosity is reached within 4 minutes, taken to satisfy the limitation of claim 5. It is commonly known in the art to employ blocked diisocyanates in order to improve the shelf-life of a two component polyurethane mixture, however blocking agents are usually not preferred because they degrade the resulting polymer during unblocking.

7. Nevertheless it would have been obvious to include blocked diisocyanates and combine the method of by Nelb et al based on the motivation that the blocking agents improve the shelf life of the unreacted composition, the reaction temperatures of Kolouch et al coincide with the temperatures of Nelb et al, which shows the polymer of Kolouch et al can be heated to the desired deblocking temperature of said diisocyanate, and finally Nelb et al specifically teach that the twin screw extruder vents any evolved blocking agents, thereby preventing the resulting polymer from degrading (Col 5 lines 40-46). Therefore, by incorporating the method of Nelb et al in Kolouch et al, one would reasonably expect that the polyester would exhibit a permanent increase in molecular weight based on the motivation that Nelb et al teach the maximum viscosity is obtained in only 4 minutes.

8. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perego et al ('025) in view of Nelb, II et al ('094), herein referred to as: Nelb et al. Perego et al teach a method of increasing the molecular weight of low molecular weight polyester polyol and/or polycarboxylic acid by reacting said polyol with diisocyanate in the melt, wherein the diisocyanate is present in an amount ranging from 0.5% to 4% based on the weight of all

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reactants, i.e. diisocyanate and low molecular weight polyester (Abstract; Col 1 lines 1-12, 48-55; examples 2 and 3). Although Perego et al teach that contact times are preferably less than 5 minutes, patentees fail to clearly teach a molecular weight increase within 2 minutes, the use of blocked diisocyanates, or melt-mixing in a twin screw extruder.

9. Nelb et al teach a method for increasing the molecular weight of low molecular weight polyester compounds, by reacting low molecular weight carboxyl-functional polyester with blocked diisocyanates in a twin screw extruder, wherein the maximum viscosity is reached within 4 minutes, taken to satisfy the limitation of claim 5. It is commonly known in the art to employ blocked diisocyanates in order to improve the shelf-life of a two component polyurethane mixture, however blocking agents are usually not preferred because they degrade the resulting polymer during unblocking.

10. Nevertheless, it would have been obvious to utilize blocked diisocyanates and the method of by Nelb et al in Perego et al based on the motivation that the blocking agents provide improved the shelf life of the unreacted composition, the method of Nelb et al prevents any potential damage inflicted by said blocking agents to the resulting polyester by venting off the free blocking agents, and finally the method of Nelb et al (Col 5 lines 40-46).

11. Nevertheless it would have been obvious to include blocked diisocyanates and combine the method of by Nelb et al with that of Perego et al based on the motivation that the blocking agents improve the shelf life of the unreacted composition, the twin screw extruder of Nelb et al vents any evolved blocking agents, thereby preventing the resulting polymer from degrading, and finally the method of Nelb et al results in short contact times, which is a preferred embodiment of Perego et al (Col 5 lines 40-46).

Response to Arguments

12. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin J. Gillespie whose telephone number is 571-272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

B. Gillespie


RABON SERGENT
PRIMARY EXAMINER